

PROJECT ONE: MILESTONE 3B – COVER PAGE

Team Number:

Tues-36

Please list full names and MacID's of all *present* Team Members

Full Name:	MacID:
Brian Tang	tangb17
Michael Shadoff	Shadoffm
Rahul Mahesh	mahेशr
Tuong Minh Doan	doant6
Luigi Quattrociocchi	quattrl

MILESTONE 3B – DESIGN EMBODIMENT

Team Number: Tues-36

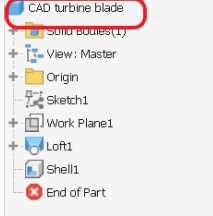
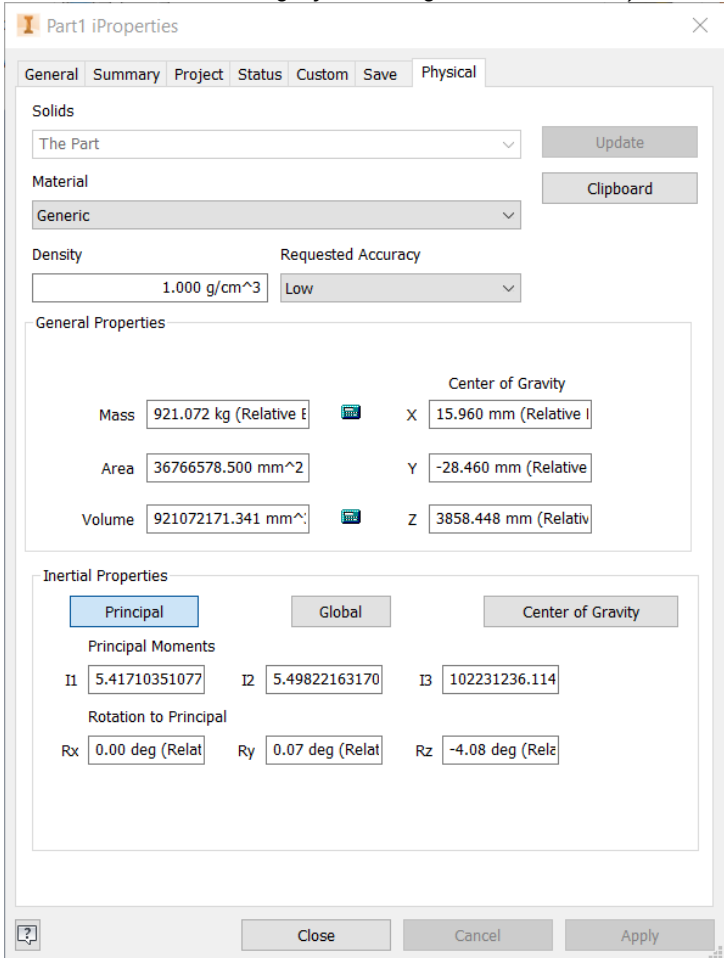
1. Deflection Estimation (Stage 1)

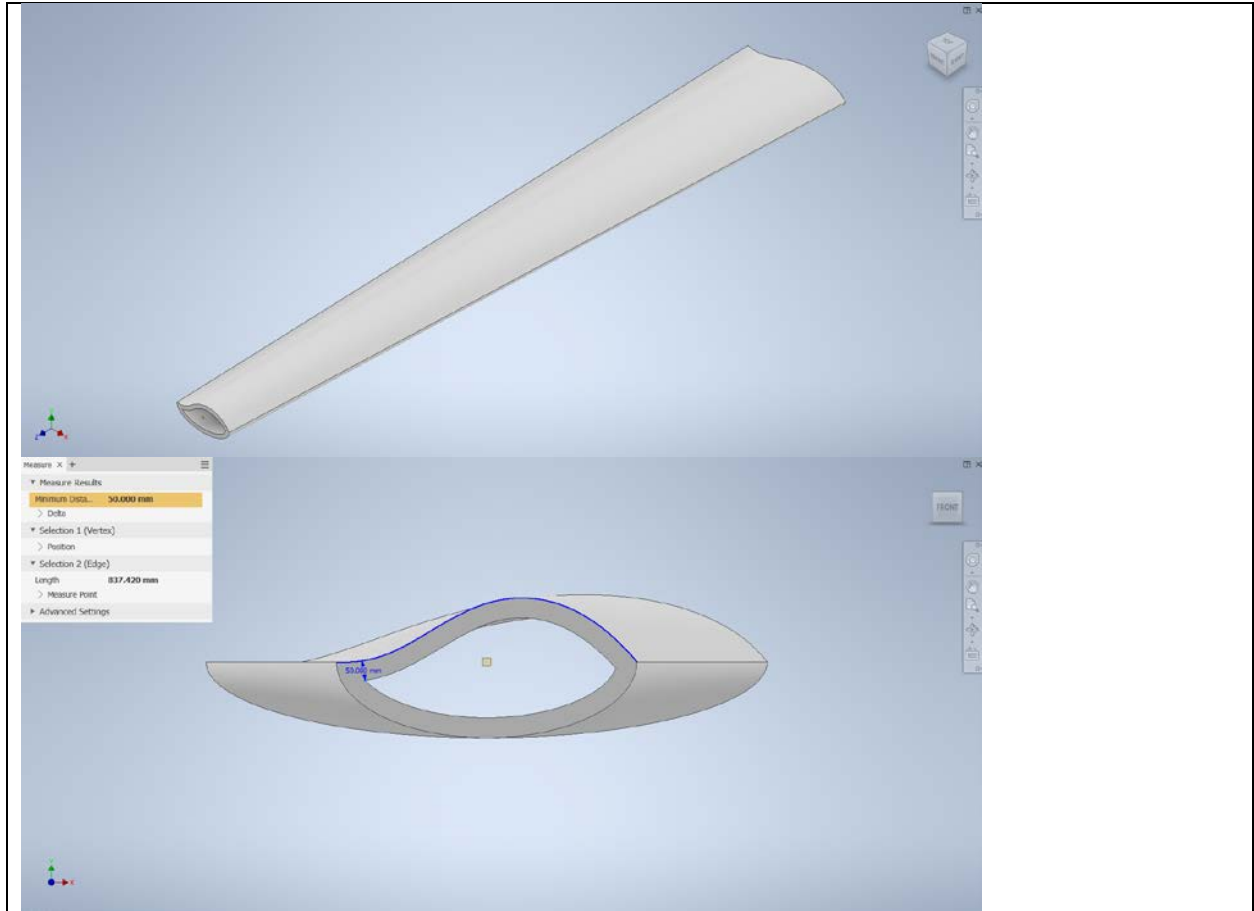
Estimate deflection δ (mm): 9.390

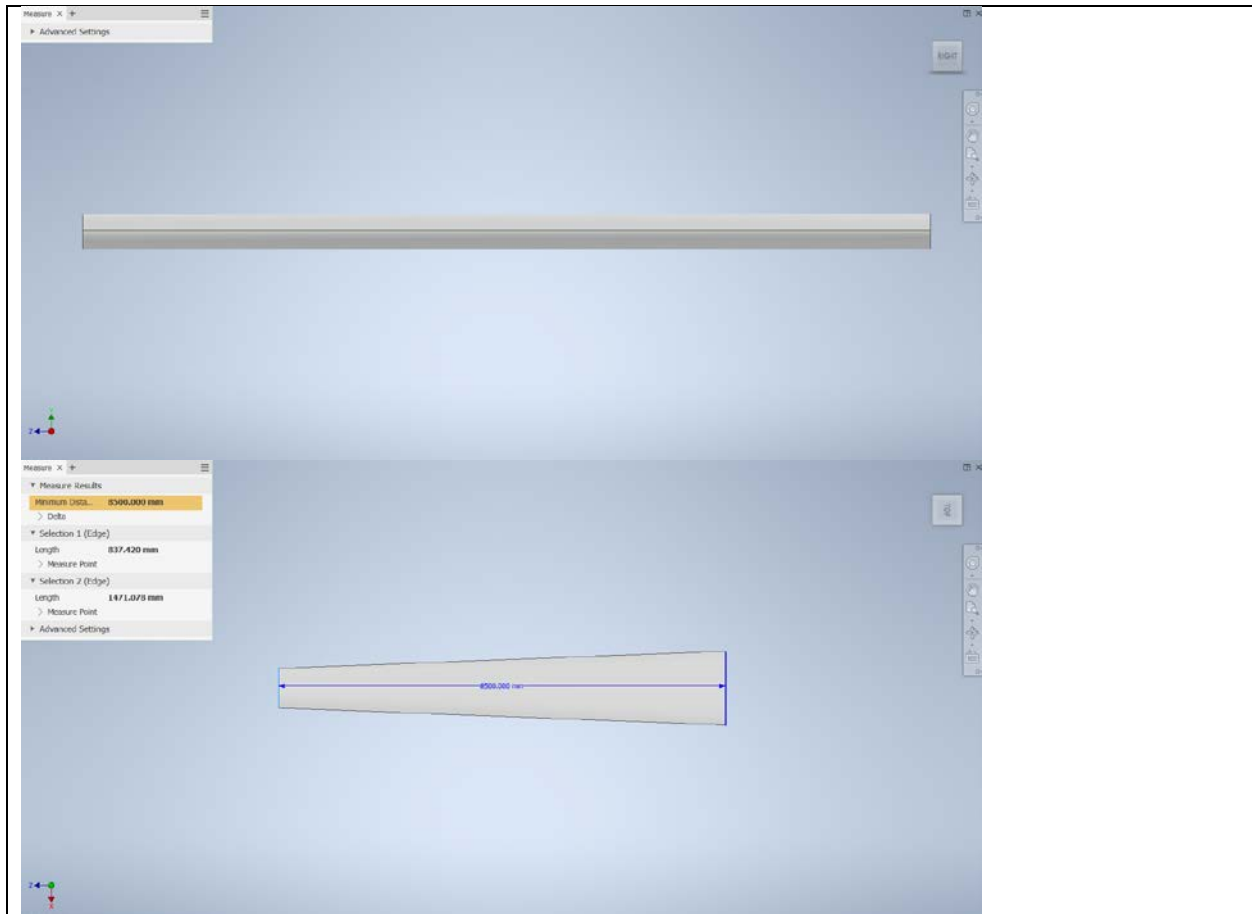
Insert calculation or photo of hand calculation in the space below.

The image shows a handwritten calculation on a grid background. It starts with the formula for deflection $\delta = \frac{p b L^4}{4 E I}$. To the right, the following values are listed: $p = 0.003 \text{ MPa}$, $L = 0.5 \text{ m}$, $E = 120 \text{ GPa}$, $t = 0.05 \text{ m}$, $b = 0.375 \text{ m}$, and $a = 0.189 \text{ m}$. The next step is to calculate the moment of inertia I using the formula $I = \frac{\pi}{4} [a^3 b - (a-t)^3 (b-t)]$. The calculation is shown as $I = \frac{\pi}{4} [(0.189 \text{ m})^3 (0.375 \text{ m}) - (0.189 \text{ m} - 0.05 \text{ m})^3 (0.375 \text{ m} - 0.05 \text{ m})]$, resulting in $I = 0.0013 \text{ m}^4$. Finally, the deflection δ is calculated as $\delta = \frac{(0.003 \text{ MPa})(0.375 \text{ m})(0.5 \text{ m})^4}{4(120000 \text{ MPa})(0.0013 \text{ m}^4)}$, which simplifies to $\delta = 0.00939 \text{ m} = 9.39 \text{ mm}$.

2. Solid Model of Turbine Blade (Stage 2)

Volume (mm³):	921072171.341
	<p>Steps to find the volume:</p> <ol style="list-style-type: none"> 1. Right-click on 3D part (see picture to the left) 2. Click on "iProperties" 3. Click on the tab called "Physical" 4. Click on "Update" to show the volume
<p><i>Insert screenshots of your team's solid models in multiple views (please show evidence of accurate CAD modeling by showing measurements).</i></p>	
	





3. Deflection Simulation (Stage 3)

Simulated deflection δ (mm): 9.659

Insert screenshots of your team's deflection simulation and provide evidence of the simulated deflection.

